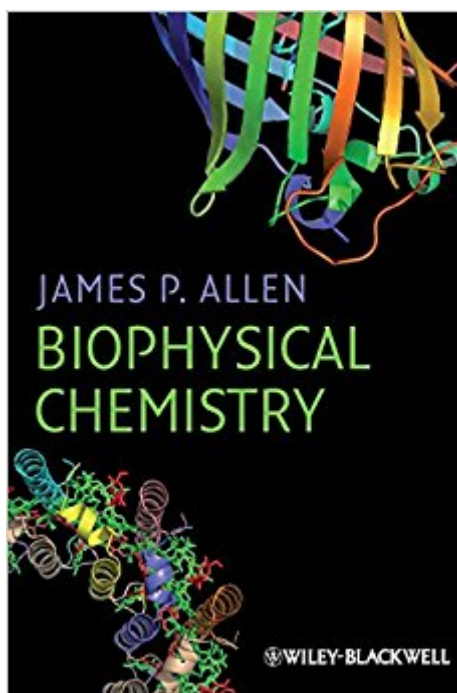



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Biophysical Chemistry



Synopsis

"Biophysical Chemistry is an outstanding book that delivers both fundamental and complex biophysical principles, along with an excellent overview of the current biophysical research areas, in a manner that makes it accessible for mathematically and non-mathematically inclined readers."

(Journal of Chemical Biology, February 2009)  This text presents physical chemistry through the use of biological and biochemical topics, examples and applications to biochemistry. It lays out the necessary calculus in a step by step fashion for students who are less mathematically inclined, leading them through fundamental concepts, such as a quantum mechanical description of the hydrogen atom rather than simply stating outcomes. Techniques are presented with an emphasis on learning by analyzing real data. Presents physical chemistry through the use of biological and biochemical topics, examples and applications to biochemistry Lays out the necessary calculus in a step by step fashion for students who are less mathematically inclined Presents techniques with an emphasis on learning by analyzing real data Features qualitative and quantitative problems at the end of each chapter All art available for download online and on CD-ROM

Book Information

Hardcover: 510 pages

Publisher: Wiley-Blackwell; 1 edition (September 2, 2008)

Language: English




ISBN-10: 1405124369

ISBN-13: 978-1405124362

Product Dimensions: 7.7 x 1.1 x 10 inches

Shipping Weight: 2.8 pounds (View shipping rates and policies)

Average Customer Review: 1.0 out of 5 stars 4 customer reviews

Best Sellers Rank: #607,535 in Books (See Top 100 in Books) #127 in  Books > Science & Math > Biological Sciences > Biophysics #204 in  Books > Science & Math > Chemistry > Physical & Theoretical > Physical Chemistry #551 in  Books > Science & Math > Biological Sciences > Biology > Molecular Biology

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"Biophysical Chemistry is an outstanding book that delivers both fundamental and complex biophysical principles, along with an excellent overview of the current biophysical research areas, in a manner that makes it accessible for mathematically and non-mathematically inclined readers."

(Journal of Chemical Biology, February 2009) "This is strongly recommended as a textbook for

advanced undergraduate and graduate students with backgrounds in the physical and biological sciences. It will also prove extremely useful to university and high school educators, medical doctors, and researchers who want to go beyond a surface treatment of biological phenomenology to its roots in physics and chemistry." (Doody's, February, 2009)

Biophysical Chemistry presents physical chemistry through the use of biological and biochemical topics, examples, and applications to biochemistry. It presents a rigorous, up-to-date treatment of the material without presuming a strong prior knowledge of math theory. Necessary calculus models are laid out in a step-by-step fashion for students less confident in their math abilities. The format of the text allows teachers ample flexibility in deciding which derivations to present in class. Students are guided through an in-depth understanding of fundamental concepts – such as a quantum-mechanical description of the hydrogen atom – and techniques are presented with an emphasis on learning through analysis of real data. Cases are drawn from timely research areas in biochemistry using an integrated approach to problem solving. Every chapter features important recent advances in biochemistry, an examination of current research problems, math and derivation boxes to guide students, and examples of both numerical and concept-based problems. Artwork from the book is available for download by instructors at www.blackwellpublishing.com/allenbiophysical

And you thought biophysical chemistry was confusing as it is. Nothing will make you more confused and second guess yourself more than reading this book. Some answers in the back of the book are correct, some are not, which basically equates to all the examples in the book being worthless. If your teacher makes you get this book, change universities. Trust me, it's worth it.

So many answers and equations are wrong in this book. Worst editing I've ever had in a text book, not happy at all.

I had this book completely wrong...I ordered it not expecting an introductory textbook, but an overview of current topics. So my dumb mistake might give me a slanted view of this book, but nonetheless I read it "as a textbook" (since even basic textbooks can be useful) and frankly was underwhelmed. Despite heroic effort and a very clear, approachable style, Allen fails to deliver for two reasons. First, the book is at far too basic a level to be useful; Allen assumes little or no background in physical chemistry. He therefore has to use up most of the space in the chapters

building up the basics of physical chemistry before getting to the biophysics. As a result the book reads like a sub-par undergraduate phys chem text with examples and practice problems taken from biochemistry. This is charitable but not realistic: anyone unfamiliar with rate equations is not ready for biophysics, period. And because the text jumps from basics to "real" problems in biophysical chemistry as examples, the connections between the background and the examples are often unclear. A particularly glaring example is in the chapter on statistical mechanics, in which Allen explains prions as a problem in statistical thermodynamics (a reach, to say the least...I suspect he wanted to discuss prions and could find no other place to shoehorn them in). To be fair, the later chapters are better in this respect; the section on membranes and electrical signaling is fairly strong. Second, the book tries to cover too much ground. "Biophysics" is an umbrella term covering lots of nonoverlapping, barely-related subjects (metabolism and energetics, protein folding, electrophysiology, cell contractility, etc.). To cover most of these topics in one book seems too ambitious to me, unless you want to give Tolstoy a run for his money. If you want to teach a course on biophysical chemistry, skip this book and instead cover a few specific topics in depth (e.g. biological redox chemistry, membrane transport, protein folding and dynamics) using reviews and giving links to other fields where appropriate; this is how I learned biophysics and so far it's served me fairly well. If you want to learn biophysical chemistry, there is nothing at all this book can teach you if you already have a good phys chem book and a good biochem book...and by this time you should have both.

While the book covers topics that are extremely relevant to biophysics, we face the regular problem of superficiality, which will diffuse to the readers as it has diffused to the author, in particular, accepting the sombrero model as the most important issue in enzyme catalysis is highly disconcerting. Thus, our issue is not so much with the content of the book, but how it is presented, which is in a way that will be highly misleading to a reader unfamiliar with the field.

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